COMMITTEE ON SCIENCE AND TECHNOLOGY

U.S. HOUSE OF REPRESENTATIVES
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SUBCOMMITTEE ON SPACE SCIENCE AND APPLICATIONS

Hearing on
Commercialization of Space Launch Systems
Room 2325 RHOB; 1:30 p.m. - 4:00 p.m.

May 17, 1983

WITNESS LIST

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STATEMENT

OF

THE HONORABLE DANIEL K. AKAKA

BEFORE THE

COMMITTEE ON SCIENCE AND TECHNOLOGY

SUBCOMMITTEE ON SPACE SCIENCE AND APPLICATIONS

U.S. HOUSE OF REPRESENTATIVES

"THE COMMERCIALIZATION OF SPACE LAUNCH SYSTEMS"

MAY 17, 1983

Mr. Chairman and Members of the Subcommittee: I want to take this opportunity to thank you for asking me to share my views on the issue of commercialization of space launch systems with you. As I'm sure you know, I have some very definite opinions on that subject--opinions which I am delighted to share today.

The importance of this issue to the long-term future of our nation's space effort cannot be overstated. The decisions we make today will surely determine the shape of the future. If we fail to make those decisions in good faith, with the courage and foresight required to guarantee success, we have only ourselves to blame. If we fail to confront these challenges head-on, we can and should be held responsible for a future decline in our nation's space enterprise.

It is crystal clear that, with the development of an operational space transportation system, we have entered into a new era of space enterprise--one which is filled with many dreams. We are now thinking about projects none of us could have imagined 25 years ago. This new era of space enterprise demands new technologies, new attitudes and new ways of managing our resources if we are to achieve the goals of our emerging vision of our future in space.

Honorable Daniel K. Akaka
May 17, 1983

We cannot continue to try to shape the future using only the tools of the past. We cannot allow our drive and our ability for creating a new world in space to be crippled by our desire to cling to the ways of the past. If we are to profit from the glorious, intoxicating success of our space program, we must take risks. And, when you come right down to it, taking risk for the sake of our future in space is really what this hearing is all about.

There can be no doubt that a national policy decision to commercialize space launch systems is an action which carries with it a certain amount of risk. At the heart of this issue are risks which apply to both the public and the private sectors of our economy.

In the case of the commercialization of expendable launch vehicles (ELVs), the risks for the government are not obvious. Since a policy decision to phase out the use and production of the ELVs by 1986 was made, it stands to reason that the government would have nothing to lose by simply turning the ELV segment over to the private sector. Although this conclusion is a reasonable one, it neglects an important consideration: if the ELVs are turned over to the private sector for the purposes of complementing launch services provided by the shuttle, and if the government then relies on these services to supplement shuttle capability, what happens to the government launch operations if, at some

point in the future, the private sector cannot deliver backup launch services when needed? Who will take on the responsibility for continuing research and development in the expendable field? Can national security interests continue to be protected if launch systems are commercialized? Should the federal government be willing to take the risk of being responsible, under the terms of the Outer Space Treaty, for possible damages to a third party stemming from a failed commercial launch? And, finally, there is the important question of the extent to which commercialization of the expendables will take potential payloads away from the government-developed shuttle.

These are risks not to be taken lightly.

For the private sector, many of the risks involved in commercializing ELVs are fairly straightforward.

First and foremost is the question of whether or not there is a real market for commercial expendable launch services. In the industry estimates vary. It is impossible to know if the availability of commercial launch services will generate future demands for their use.

A second critical risk is the question of shuttle pricing policy and whether or not the government will, once committed to the commercialization of ELVs, carry out its decision to commercialize in good faith. For example, there

is nothing to guarantee that the government won't raise the cost to the private sector of running expendable operations while at the same time further subsidizing and thus lowering the cost of flying on the shuttle. This strategy would obviously force any commercial ELV operation right out of the market place into the arms of serious financial loss. Commercial operators of ELVs may also run the risk of having the government commandeer some of its scheduled launches capriciously, in the name of urgent national need. Any such preemptive action on the part of the government would certainly disrupt private sector operations in terms of both scheduling and revenues.

It is clear that, in the case of the commercialization of expendable launch vehicles, risk cuts both ways.

The question is: Are these risks worth taking?

The answer is very simple. Just look at the results of failing to take these risks.

Every member of this Subcommittee has before him a brochure which, in the space community, is unsurpassed in its elegance, style and approach. The brochure you have before you lists the advantages of using Arianespace for launches. I urge you to take the time to read this document carefully . . . read it and then tell me, if you owned a

satellite and were looking for launch services, whether or not you could resist booking on Arianespace. My instincts tell me that resistance would be difficult.

One of the many strengths of the marketing strategy used by Arianespace is its ability to point out the current weaknesses in the operations of our shuttle system. In January of 1982, the President of Arianespace sent a letter to the Colombian Ministry of Communications in an effort to secure a commitment to launch on Ariane. I ask that the full text of this communique be inserted in the record, and will take this opportunity to highlight the arguments used by Ariane:

--that "SATCOL" (the satellite in question) is not included in NASA's program, and therefore would have to yield priority to other satellites.

--that DOD enjoys absolute priority and at any moment can override any other satellite.

--that an "incident" on the shuttle could immobilize the entire fleet and delay a launch for months.

--that the NASA estimates for turn-around time have always been optimistic and delays are likely.

--that the preparation of the interface for a satellite is a long and difficult task and can take four entire months prior to launch.

--that a price increase is certain to occur--maybe as much as 50 percent.

--and finally, that "It can be proven that there isn't a single user of a new space system that has placed its confidence to launch <u>all</u> satellites on Shuttle."

Honorable Daniel K. Akaka
May 17, 1983

These are issues which can, in part, be successfully addressed by pointing to a reliable backup capability for the space shuttle.

The fact is that the European space community, through ESA and Arianespace, is rapidly demonstrating that it will be able to provide commercial launch services to the world community on a regular basis. While there are those who might claim that Arianespace launch capabilities need not be taken seriously due to the failure of two out of its five launches, these failures probably represent simple perturbations common to any new venture.

In September of 1982--only eight months ago--a top level NASA study concluded that the U.S. could lose a maximum of 94 launches to the European Ariane launch vehicle in the 1983-1994 period at an estimated cost of $3 billion. The study further pointed out that in addition to the loss of $3 billion in launch charges, it was also probable that as a result the U.S. would be less likely to win contracts for development of these communications satellites to be launched on Ariane. This loss to the total economy could amount to as much as $9.92 billion over a 12-year period.

Our policies and procedures for the exploration, use and development of space were formulated for the most part

Honorable Daniel K. Akaka
May 17, 1983

25 years ago with the passage of the act creating NASA. At that time, the U.S. Government had a corner on 100 percent of the free world market for launch services.

Today, we are no longer the only nation with a capability of providing launch services: Japan, China, India and the European Space Agency are all at various stages of developing and perfecting their launch capabilities. The Soviet Union, which of course has been launching longer than we have, is now offering launch services on a commercial basis. The fact is that the world marketplace for launch services has become competitive. If we, as a nation, are to respond to this challenge, we must change our way of thinking about the role of the government and the private sector in space. We must be able to forge a true partnership between public and private interests in space. And, we must not fail to create a climate conducive to private sector investment in space.

The Senior Interagency Group (SIG) has been examining the question of commercialization of launch services for the past few months and made their recommendations this weekend. While I am certainly pleased with the SIG recommendation to proceed with the commercialization of ELVs, I am aware that a mechanism must be found to properly implement this policy. The major problem with policy directives

is that they are, in general, useless, unless they are accompanied by a concrete plan for implementation.

If we are to commercialize space launch systems successfully, then we must put in place the operational mechanisms which create, by force, the necessary climate in which the private sector will be allowed to succeed. This principle applies to both the commercialization of existing ELVs and vehicles which are the result of new technologies and new methods of launch, as well as to the shuttle itself. In fact, this principle applies to every area and activity in which private sector participation is desirable.

First, the federal government must offer a way for the private sector to see its way clear to making a profit in space. By definition, this means determining the worth of government assets and services at market value or even at cost. It is not reasonable to expect the private sector to foot the bill for sunk R & D costs. Where leasing of facilities and services are concerned, the federal government should keep its prices fair and reasonable . . . meaning not prohibitively expensive.

Second, the federal government must make a commitment, both in policy and practice, to make life as easy as

possible for the entry of the private sector into space and space launch services. This means that unnecessary and excessive red tape must be eliminated. Regulations must be altered to be uniform, clear and simple, and the entire regulatory process for launch clearance and payload approval must be streamlined.

Within the federal government, an agency must be chosen to act as the lead agency in matters regarding regulation of private companies seeking launch clearances. A single point of contact must be established in order to avoid costly and time-consuming duplication of paperwork and redundant regulation. Each federal agency with statutory responsibilities must further have its role clearly defined. This role should be one of minimal interference; in fact, the decision on whether to grant or deny launch approval should be limited to consideration of the following issues: public safety, national security, insurance coverage, indemnification and the balancing of competing interests of airspace users.

The regulatory process itself must be streamlined. Launch sites and specific classes of vehicles can and should be issued permits and clearances on a one-time basis for a sequence of routine launches. Approval of launch sites, vehicles and operations should be granted, or denied, in a timely fashion; which is why I suggest that mandatory time limits for processing applications be set. Now is also

the time to start making decisions on insurance levels to be required, range safety procedures and means of indemnification.

The fact is, until these issues are confronted squarely by the federal government, we have no hope at all of being able to create a climate in which the private sector can successfully enter the space launch business.

I introduced H.R. 1011, the Space Commerce Act, as a logical first step in confronting these issues. The fact is that in August of 1981, when Space Services, Inc. sought clearances to obtain permission for a test suborbital launch, the federal government had no policies or clear-cut procedures for granting these clearances. SSI was forced to obtain regulatory permissions, clearances and approval from five different agencies or bodies: The Federal Aviation Administration, the Department of State, the Federal Communications Commission, NASA and the North American Aerospace Defense Command. Furthermore, the company had to register with the Bureau of Alcohol, Tobacco, and Firearms as well as with the Internal Revenue Service. As a result of this lack of a streamlined procedure, it took this particular company over six months and a quarter of a million dollars to receive clearance to launch a test flight.

This kind of unnecessary red tape entails costly delays and might discourage private sector investment in the space launch business.

Honorable Daniel K. Akaka
May 17, 1983

H.R. 1011 recommends the Department of Commerce as the lead agency. As peculiar as this recommendation may seem to some, it is based both on common sense and the elimination of all other possibilities.

It is not appropriate for the Department of Defense to assume the lead agency role. Regulation of the private sector is not one of the DOD mandates and I'm sure the DOD has better things to do than certify launch sites, vehicles, and promulgate regulations.

The Federal Communications Commission does play a significant role in issuing licenses for the use of necessary communications frequencies. The FCC's role is very specific and its expertise in other space areas is limited; this Commission has neither statutory authority outside the communications field nor necessary technical expertise to operate as the lead agency.

The Federal Aviation Administration, while at first glance a likely candidate, has as its primary responsibility air safety. Furthermore, the FAA would have no jurisdiction over launches taking place from installations controlled by the Department of Defense or those outside the continental U.S. The FAA has no procedures for clearing rocket launches, and even at the FAA, technical expertise in the field of space launches is limited.

Honorable Daniel K. Akaka
May 17, 1983

Of all the agencies, the one most likely to make sure that a proper business and regulatory climate is never created for private sector activities is the Department of State. Furthermore, State has neither a regulatory charter nor the technical capability to assume a lead agency role in regulating commercial space launches. Some have even questioned to what extent the Arms Export Control Act should be applied to the launch of sounding rockets and suborbital flights.

Although the State Department does have a significant role to play with regard to adherence to international treaties and agreements, to designate State as the lead agency and initial point of contact is tantamount to saying that we really don't want to encourage private sector involvement in space launch systems. Many currently make the claim that the State Department cannot handle the policy responsibilities it already has for setting space policy. Witness the continuing controversy over the State Department's role in coordinating U.S. policy for international telecommunications. The State Department has been heavily criticized for its inability to set forth clear U.S. policy in international telecommunications issues and avenues are being explored to relieve State of this responsibility. I am and will continue to be <u>categorically opposed</u> to any move to assign either lead agency

responsibility or initial point of contact responsibility to the Department of State.

As a third party agency, the Department of Commerce is an obvious choice for both an initial point of contact and a lead agency function which could be merged in the long-term. Commerce also has the advantage of having a regulatory charter which permits this activity. Lead agency designation does not mean that the designated agency could abrogate the basic responsibilities of the other agencies involved in regulating specific areas of private launches. Lead agency designation simply means that the agency would take the lead on the process of granting permission to launch, would coordinate the issuing of permits and would guarantee and oversee a streamlining of the entire process. As such, the Department of Commerce would be responsible for checking with all the other agencies and getting their specific clearances in their areas of expertise. Another point in Commerce's favor is that when we talk about space launching services, we are talking about business . . . about commerce and about trade. We are talking about the birth of a new industry in this country. As such, from a philosophic and policy point of view, this industry belongs under the Department of Commerce.

The major issue to be addressed is the fact that the Department of Commerce has no expertise in the area of space launch services. This is not the obstacle it might appear

to be, for as far as developing policy and procedures for private sector launches is concerned, no other agency has any more expertise in the regulation of private sector launches, for this industry is a brand new one.

Knowing well that creating a set of policies and procedures for developing and regulating this new industry will be very long and complicated task, I suggest that a working group be established among the cognizant agencies to coordinate the development and implementation of these policies. For the interim, I also believe that NASA should be the initial point of contact, until a mechanism can be developed to put a streamlined regulatory process in place.

I have always made the argument, and will continue to make it, that a Bureau of Commercial Space Activities should be created at the Department of Commerce. Those who oppose this proposal cite the fact that Commerce has no technical expertise, that we live in times of serious budgetary constraint and that we cannot afford the extra funding this move would entail. These arguments are irrelevant. The fact is that we know where the experts are: they are at NASA, at State, at DOD, at FCC, and at FAA. All we have to do is to assemble under one roof the selected personnel from each of the appropriate agencies. This can be done through a simple legislative authorization and through reprogramming of positions. As a Member of the House of Representatives, and as a Member of the House Appropriations

Committee, I lend my full support to such a reorganization.

Thus, a Bureau of Commercial Space Activities could be created at very little additional expense. The Bureau of Commercial Space Activities, housed in the Department of Commerce, would then be superbly qualified to act as an initial point of contact and a lead agency. If, in the future, commercial activity escalates to the point where it becomes a significant and leading industry for the United States, the Bureau of Commercial Space Activities could then be spun off and accorded full agency status as the Commercial Space Agency. Although this may be as far away as 20 or 30 years from now, we must make it part of our vision of the future, for we have many planning and policy issues to settle. We must lay the foundation for the future.

The bulk of my testimony today has been devoted to the commercialization of expendable launch vehicles. As far as commercialization of the shuttle is concerned, I think it is inevitable.

The questions are: Is now the right time? Is the shuttle truly operational? Are the glitches truly out of the system? Are we ready to turn the operation of the system over to the private sector? These questions need answers. For my part, I simply don't know. What is clear, however, is that NASA is an R & D agency by design and by statute. In the long-term, commercial operations do

not belong in NASA unless we redefine the mission of the agency. The private sector undoubtedly has a great deal to contribute to the shuttle marketing operation in the meantime. Such proposals deserve serious consideration by this Administration and Congress.

We have a great deal of money invested in our shuttle programs. According to NASA, the total costs for research, development, test and evaluation of the shuttle were $10.1 billion, in real year dollars. This is a sizeable investment and one which we cannot afford to throw away. Shuttle pricing policy now in effect was initially conceived to achieve full operational cost recovery over the 12-year total life-cycle of the shuttle system.

From an economic perspective, this approach is not unreasonable--particularly from the standpoint of increasing demand for launch services. Having said that one must also recognize that to the extent that the government subsidizes shuttle operation, it may serve to inhibit commercial development of alternative space transportation systems. These conflicting policy requirements must be balanced in whatever shuttle pricing policy is set for future launches.

This issue certainly merits further serious consideration by this Committee.

What is clear is that recovery of total government R & D costs in this program is economically inefficient and thus absurd. This conclusion can and should be applied to the

broad issue of the commercialization of space launch systems.

Government R & D in this program, as in all programs, benefits a wide variety of users and it is unreasonable to require only the direct users to bear the full cost of the research.

Mr. Chairman, one point I feel I really must raise is the effect that the Office of Management and Budget is having in the creation of de facto national space policy by its arbitrary and often inconsistent fiscal directives to NASA. OMB, by clearly failing to consider the implications of its actions, had adopted the worst of all possible approaches to maintaining U.S. pre-eminence in space transportation. By refusing to accept or promote the commercialization of the shuttle in any time-frame, OMB has forced NASA to adopt a commercial role and yet OMB has dictated that NASA not develop the market demand for the shuttle to such an extent that a fifth orbiter would be required. Thus, OMB is forcing NASA to play an unnatural role and insisting that the agency play it poorly. This can only benefit foreign competitors to the U.S. space shuttle.

OMB's pessimism regarding the future market for shuttle launches is unwarranted, but, by virtue of OMB's

power in policy matters, may become a self-fulfilling prophecy.

Mr. Chairman, I commend this Committee for its vigorous examination of issues relating to space commercialization. I can only hope that your effort will insure that in the future a strong and coherent space policy will guide the action of our nation in space and that it will not be guided by the myopic directives of fiscal bureaucrats.

Mr. Chairman, in this rather lengthy testimony I have tried to highlight what I believe are the policy issues before this Committee. I have tried to identify the risks inherent to the commercialization of launch services for both the public and private sectors, and I have tried to point out what I believe are the consequences of failing to take these risks. I firmly believe that we have no choice but to engage in risk. Our future in space depends on our will to take a leadership role in commercial space activity. As far as H.R. 1011 is concerned, I continue to believe that this is a piece of legislation whose passage is important to the future of our nation's space effort.

While the terms of H.R. 1011 may need to be amended as a result of information unveiled in these hearings, I firmly believe that it is the responsibility of Congress, not the Administration, to set the terms of policy and procedures governing private sector space launches.

If we fail to enact legislation, and if the Administration sets policies and procedures by fiat or by executive order, who is to say that the next Administration won't have a change of heart and discourage commercialization of launch systems? Who can guarantee that Administration policy will not serve to discourage, rather than encourage commercialization, in order to protect what it views as the interests of the shuttle? And finally, I ask you: given the Administration's obvious lack of judgment of the issue of commercialization of our remote sensing capabilities, who can tell me that this Administration shows good judgment in the area of commercial space activities?

It is for these reasons that I believe that Congress must act on this issue. I, therefore, support passage of legislation which clearly sets forth policy on the commercialization of space launch systems.

Mr. Chairman, this concludes my formal testimony. For the record, I have submitted formal documentation on all the clearances, permits and permissions required for a private sector launch. I have also included responses from the FCC, FAA and NASA regarding their respective roles in granting launch permissions, as well as a copy of the letter sent from the President of Arianespace to the Columbian Ministry. I ask that these documents be included in the record of this hearing.

Thank you very much.

NASA
National Aeronautics and Space Administration

Hold for Release Until
Presented by Witness
May 17, 1983

Subcommittee on Space Science and Applications
Committee on Science and Technology

House of Representatives

Statement by:

Lieutenant General
James A. Abrahamson
Associate Administrator for Space Flight

25th Anniversary
1958-1983

98th Congress

STATEMENT OF
LIEUTENANT GENERAL JAMES A. ABRAHAMSON
ASSOCIATE ADMINISTRATOR
FOR SPACE FLIGHT

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

BEFORE THE

Subcommittee for Space Science and Applications
Committee on Science and Technology
House of Representatives

Mr. Chairman and Members of the Subcommittee:

Mr. Chairman, I am pleased to appear before this subcommittee to participate in your Hearings on the important subject of commercial activities in space. As you know, the Office of Space Flight has had significant involvement in the evolution of commercial activities in space ranging from providing launching services for communications satellites to private sector investment in the development of upper stages such as the Payload Assist Module (PAM-D) used to place the spacecraft on STS-5 in geosynchronous orbit and other aspects of launching systems such as the development of the 3914 configuration of the Delta vehicle.

We believe that we are truly at the beginning of a new phase in our national space efforts, the exploitation of space. In this exploitation there is a vital role for the private sector. I firmly believe that the full promise and the potential benefit of space activities can only be realized as we harness the engine of commercial enterprise, in partnership with our government efforts. In a proper and mutually rewarding relationship, this partnership will assure continued U.S. leadership in space. Therefore, I fully support the national goal of expanding U.S. private sector investment and involvement in civil space and space-related activities, as announced in the National Space Policy on July 4, 1982. NASA has made an excellent start in this expansion through joint endeavor agreements, technical exchange agreements, and our industrial guest investigator process. These approaches hold great promise in developing the appropriate cooperative relationship, I mentioned, between the Government and the private sector. As an example, a few weeks ago, the Office of Space Flight entered into a cooperative agreement with the Orbital Systems Corporation for the development of a Transfer Orbit System (TOS) to be utilized as an upper stage with the Space Transportation System (STS). This cooperative agreement, patterned after its predecessor, the PAM-D agreement with McDonnell Douglas, establishes the ground rules for the private sector development and marketing of an upper stage for use with the Space Shuttle which will accommodate payloads larger than the PAM but smaller than those which might require the Centaur stage.

The Office of Space Flight is involved in many other discussions with prospective private sector proposers on efforts directly associated with the STS. Orbital Systems Ltd. of Lanham, Maryland has proposed the environmental monitoring system for the Shuttle payload bay. This system is to function in a manner similar to the flight recorder on commercial aircraft. The Fairchild Corporation has proposed a Shuttle-tended, mobile, unmanned space platform which is supported by ground based systems and services. The platform will be available for lease and can be utilized for scientific instruments, materials processing or remote sensors. Mr. Chairman, I believe that proposals such as these and the McDonnell Douglas/Johnson and Johnson continuous flow electrophoresis experiments are of prime importance because they augment and/or exploit the unique opportunities provided to us by the Space Shuttle. I feel, therefore, that the Space Shuttle is a key to the development of new products or services and other national benefits that can be derived from increased commercial activity in space. Along with prospective operators of commercial ELV's, these endeavors represent true commercialization in the sense that they each create new commercial products or services and to varying degrees add new dimensions to our store of space technology. In adding this new dimension to our space capability, some people and institutions involved are tackling significant development risks as well as market risks. Therefore, in these instances it is appropriate and consistent with NASA's technology mandate to provide the assistance and encouragement that our joint endeavor and other agreements provide. By the same token, their success adds to the capability of the STS, while avoiding the requirement for federal funding. So long as we can proceed in this approach equitably and properly, this is the powerful mutual reinforcement of government and private efforts that I feel can assure U.S. space leadership. As I indicated, these Shuttle-related proposals are consistent with the commitment and investment made in the STS over the last decade.

Regarding the STS itself, we have not received any private sector proposals which involve its day-to-day operation. Several internal reviews have been conducted on this possibility. The most recent reviews were a part of the overall effort which resulted in the National Space Policy. These reviews concluded that it is premature to consider such an alternative until the STS has reached a sufficient state of maturity to allow the system to be considered self-sustaining. Each of these reviews independently reached the conclusion that it is premature to consider the transfer of operation of the STS to the private sector, but that such a transfer in the future should not be precluded. We are insuring that our programmatic actions are in keeping with this principle.

As you know, we have received from the Space Transportation Company a "proposal" to fund a fifth orbiter. I use the word "proposal" because it has often been described as such; however, the original submission did not meet the criteria normally used

by NASA when it uses the term proposal. We conducted a series of discussions with the representatives of the Space Transportation Company with a view toward gaining a better understanding of the concept proposed. As a result of those discussions, NASA has outlined a series of concerns and issues for consideration for such a proposal.

As you might imagine, the issues are involved with the exercise of priority for security and other government time-critical launches, exclusive of any agreement; pricing and its relationship to appropriate return on investment, as well as proper cost reimbursement to the Government; the impact on our Space Shuttle customers; and, of course, our prime consideration -- safe and effective operation of the STS.

Our present status is that we have recently received from the Space Transportation Company a set of "Proposed Principles for Incorporation in a Definitive Agreement of the SpaceTran Procurement of an Orbiter." We are reviewing this set of principles and intend to continue our discussions if there appears to be a mutually satisfactory conclusion in sight.

We have also received several proposals associated with private-sector entities assuming the marketing function for the STS. We have delayed the completion of the evaluation of these proposals until we have established an Agency position on the best method for accomplishing this marketing function. We expect this within the next month or so, and then we will proceed with a more formal evaluation process.

Regarding proposals which have been received by the Government which involve the establishment of new launch systems from new launch sites, NASA has served as an advisor to the Federal Aviation Administration, the Federal Communications Commission, and the Department of State on the technical characteristics of these proposals as each of these agencies exercises its respective regulatory role. NASA may also provide technical advice to the proposer upon request and as agreed to by NASA. In addition, NASA participated in an interagency effort, led by the Department of State, to review the existing regulatory and licensing process as it applied to the license request of Space Services Incorporated for the launch of their CONESTOGA I launch vehicle from Matagorda Island in September of last year. Although at the time the consensus of the interagency group was that the existing licensing procedures were adequate, it is readily apparent within this same interagency group that there are areas in this Government approval process that could be streamlined. I believe the involved agencies are prepared to undertake the streamlining process under the auspices of a Senior Interagency Group Working Committee. NASA will continue to support the effort and to encourage it.

We have begun the phase-out of the Delta vehicle by taking action to stop production of vehicles beyond our known

requirements. The DOD has recently announced that it is stopping the production of the Titan vehicle. These actions have been taken in accordance with a longstanding plan to transition from the operation of expendable launch vehicles to the STS. As a result of a number of requests from industrial organizations, venture capital firms and others, NASA is studying the question of transfer of these systems to private operators. Shortly after the NASA study began, a Senior Interagency Group (SIG) Space Working Group also began to look into this question.

I fully support the recently announced policy concerning the private sector operation of the Expendable Launch Vehicles currently operated by the Government. There is a reasonable question about the potential impact of such an action on the Space Shuttle. Although I am naturally concerned about the competition, the policy establishes a clear operating framework with respect to the STS and the commercially operated Expendable Launch Vehicles. In particular, it confirms that the pricing policy for the Shuttle will be maintained. This is a fundamental anchor point in that it provides confidence for our Shuttle customers, and a firm business planning base for potential Expendable Launch Vehicle privatization endeavors. Therefore, I am confident that the STS, with all its past investment and promise for the future, can go forward, and that private launch vehicle ventures can also flourish where they can best fill a market need or complement the Shuttle.

Mr. Beggs, in his earlier testimony to this subcommittee on May 3, 1983 stated: "We must, however, proceed with caution as we enter this relatively new arena. Although I wholeheartedly believe that the time has come to encourage and support expansion of commercial involvement in space activities, it is imperative that we develop sound guidelines by which this expansion takes place." I fully support the thrust of Mr. Beggs' statement and will enthusiastically support the Agency's efforts to establish those guidelines and, at the same time, insure that every reasonable approach proposed by the private sector is provided adequate consideration and opportunity.

Mr. Chairman, we intend to continue our efforts to increase the involvement of the U.S. private sector in civil space activities with a view for the national economic benefit and to fully exploit the capabilities of the STS. I will be pleased to respond to your questions.

STATEMENT OF
HERBERT A. REYNOLDS, DEPUTY DIRECTOR, INTELLIGENCE AND SPACE POLICY
DEPUTY UNDER SECRETARY OF DEFENSE (POLICY)
BEFORE THE
SUBCOMMITTEE ON SPACE SCIENCE AND APPLICATIONS
COMMITTEE ON SCIENCE AND TECHNOLOGY
HOUSE OF REPRESENTATIVES
MAY 17, 1983

Mr. Chairman, I am pleased to have this opportunity to present the Defense Department views on space commercialization issues and specifically on the commercialization of expendable launch vehicles -- or ELVs. I am accompanied today by Major Thomas Maultsby, from my office, who was co-chairman of the interagency working group which studied the commercial ELV issue, and by Lt Col James Jacoby from Headquarters, Air Force.

If you have no objections, I intend to have both Col Jacoby and Major Maultsby respond directly to your questions should I feel that they can provide a more complete response.

During the past 18 months the Department of Defense and all other departments and agencies concerned with our nation's space programs have been involved in a series of space policy studies. Three of the most important documents resulting from these efforts are the National Space Policy, the Department of Defense Space Policy, and the policy on the Commercialization of Expendable Launch Vehicles which was signed by the President on 16 May.

The National and Defense Space Policies provide guidance for the conduct of the United States space program and related activities. The National policy recognized the importance of private sector involvement in U.S. space activities. Included in the listing of basic goals of the U.S. space program are a mandate to ". . . maintain U.S. space leadership --- obtain economic and scientific benefit through the exploitation of space --- and -- expand

the U.S. private sector involvement in civil space and space related activities." Also contained in the National Space Policy are the statements:

"The U.S. Government encourages domestic commercial exploitation of space capabilities, technology, and systems for national economic benefit." and

"The U.S. Government will provide a climate conducive to expanded private sector investment and involvement in civil space activities ---."

The DoD approach to the proposed commercialization of expendable launch vehicles was, at all times, guided by the objectives and principles I have just outlined.

Earlier this year, the President directed the Senior Interagency Group (Space) to review the issue of the commericalization of Expendable Launch Vehicles. An Interagency Working Group, including representatives from DoD, JCS, NASA, State, Commerce, OMB, DCI, ACDA, and OSTP, was formed to conduct this study. A thorough review of the issues, benefits, and implications, both foreign and domestic, related to commercial ELVs was conducted. Based on the group's analysis, it was concluded that such an effort would be consistent with national policy and would yield considerable economic benefit to the U.S.

This decision recognizes that commercial ELV operations could potentially reduce the Shuttle mission model. The interagency evaluations, however, led to the conclusion that the potential impact on STS operating costs was not sufficient to warrant discouraging the proposed ELV commercialization by the US private sector.

It was the group's unanimous conclusion that the U.S. Government should fully endorse and facilitate the commercialization of ELVs. It was further

agreed that the U.S. Government should not subsidize this activity but should structure the agreements for use of its facilities, equipment, and services consistent with the goal of encouraging viable commercial ELV launch activities.

The President's Commercial ELV policy reaffirms the existing U.S. Government commitment to the Shuttle and the intent to make it available to all users -- domestic and foreign, commercial and governmental -- subject to U.S. Govenment needs and priorities.

The National Space Policy restated the U.S. commitment to the Shuttle as the primary launch system for both national security and civil government missions. We are fully committed to the Shuttle and our program to transition all DoD payloads to the Shuttle is well underway. Within a few years essentially all national security payloads will be Shuttle optimized and very few will remain compatable with ELVs. Based on this transition, steps have already been taken to discontinue future procurement of TITAN launch vehicles by the DoD.

Within the DoD, we believe that the Shuttle will prove adequate for routine launch activities. We view the commercialization of ELV's as a potential means to maintain an expendable launch vehicle production and launch capability at little or no cost to the DoD that could contribute to the goal of achieving a more robust capability to place payloads in orbit. While the immediate value of this capability to DoD is limited by the number of satellite programs compatible with the launch vehicles being marketed, it would at least provide a base from which an effective backup to the Shuttle could be established if needed.

Another area where the commercialization of US ELVs benefits the DoD is related to technology transfer. If U.S. commercial ELVs are not available

and the satellite market expands beyond the capabilities of the STS and Ariane, a market for additional ELVs will be created. This market could be serviced in ways detrimental to our security. We must always remain aware of the fact that space launch systems have inherent military applications.

In addition to the direct benefits which will accrue to the DoD should a vigorous commercial launch capability be developed by the U.S. private sector, we believe that there are other benefits which provide strong incentives to support such an effort. These include enhancing the economy, creating jobs, expanding the tax base of the U.S. and a number of states, and improving our international balance of payments.

Commercial ELV production and operations would maintain this segment of our high-technology industrial base and provide jobs for thousands of workers. Each launch conducted by a U.S. produced ELV rather than the Ariane has been estimated to bring nearly $100M of new business into the U.S. and thereby improve our international balance of payments.

Other commercial space ventures have already been started in conjunction with the Space Shuttle. These include private-sector development of upper stages compatible with both the Shuttle and ELVs, and development of a satellite which leases services to individual payloads on request. The U.S. Government has already received significant benefits from past activities, such as selling launch services to commercial communications satellite operators and from the communications satellite industry which has provided major economic benefits to the United States.

In our view commercial ELV production and provision of launch services is an obvious and logical extension of this industrial activity. Further, a viable, high technology space launch industry could spawn numerous spinoffs

and supporting activities and provide part of the base for U.S. dominance of what will undoubtedly become an even larger commercial space activity with favorable economic benefits to the people of the United States.

Although we would exercise it only in an emergency, the DoD has priority use of the Shuttle. Any payload could be "bumped" to make way for a national security payload. Commercial satellite manufacturers are concerned over the issue of priorities and other Shuttle scheduling problems, and are expressing their concern by requiring that their payloads be dual compatible - that is the payload could be launched by an ELV or the Shuttle. Without U.S. commercial ELVs, dual compatibility will mean the Shuttle and the Ariane. If a significant portion of this market for commercial satellite launch services is lost to foreign competition, the direct and indirect costs to the U.S. economy could be as high as 10 billion dollars over the next 12 years.

As the government discontinues the procurement of ELVs, existing production and launch facilities will become available. These residual facilities and equipment will have little value to the U.S. Government but considerable value to a U.S. commercial ELV industry. The sale or lease of these items would reduce agency budgets for production close down and disposal of assets. These assets include major launch vehicle components, spare parts, and a substantial inventory of unique production equipment.

A considerable portion of our deliberations and subsequent interagency coordination activities were devoted to developing general pricing guidelines. It was concluded that any consideration for the use of U.S. Government facilities, equipment, and services, should be based on the following general principles:

- Cost recovery for services should be based on those additional costs incurred by the U.S. Government;

- The U.S. Government will not seek to recover ELV design and development costs or investments associated with facilities to which the U.S. Government retains title;
- Tooling, equipment and residual ELV hardware costs will be priced on a basis that is in the best overall interest of the U.S. Government.

The President's Policy on the commercialization of ELVs directs the formation of an interagency working group, co-chaired by the Department of State and NASA, to:

- streamline the procedures used to implement existing licensing authority;
- develop and coordinate the requirements and process for the licensing, supervision, and/or regulation applicable to commercial launch operations from commercial ranges, and
- recommend the appropriate lead agency within the U.S. Government to be responsible for commercial launch activities.

Until a final selection of the lead agency is made, the Department of State will serve as the U.S. Government focal point for all inquiries and requests relative to commercial ELV activities. Until the final requirements are defined the government will continue to use the State Department's existing licencing authority for the regulation and authorization of commercial launches. Matters of flight safety and other technical issues will remain the responsibility of NASA, Defense, the FAA and the FCC.

In summary, we support the President's Policy on the Commercialization of Expendable Launch Vehicles by the U.S. private sector. The existence of such a capability will provide the basis for a more robust space launch capability and could support future developments to satisfy unique national security requirements. National security could also be enhanced by having

a backup launch capability for selected national security missions in the event of a generic problem that could ground the STS fleet. There could also be national economic benefits resulting from domestic commercial exploitation and operation of U.S. Government developed ELV capabilities, technologies, and systems. These occur in the form of: tax revenues and reimbursements derived from the provision of launch services; a positive impact on the U.S. balance of payments to offset losses of launches to foreign competitors; complement the Shuttle program to meet the demand of many commercial users to have a U.S. backup to the Shuttle; an alternative for hazardous or other special payloads that are technically or economically not feasible to use with a manned system; and an enhanced base of domestic technical production facilities and associated manpower.

Additionally, by approving the commercialization of existing ELVs, the U.S. Government could avoid some, if not all, close-out costs associated with the termination of the present U.S. Government ELV contracts. Commercial launch operations could stimulate the U.S. economy and contribute to a more effective and flexible U.S. space launch capability which would contribute to maintaining U.S. leadership in space.

We are committed to the Shuttle as the primary means for achieving access to space and do not believe that commercialization of ELVs will seriously affect the viability of the Shuttle program.

We believe that the U.S. Government must support and encourage the U.S. private sector to compete for the multi-billion dollar satellite payload and launch services market -- or risk losing a portion of it to foreign competitors.

The U.S. private sector has indicated willingness to enter the commercial

launch services market on their own capital, without government subsidy. All they have requested is an opportunity to compete. Their experience, expertise, and the excellence of their product, should allow them to win a major share of the market that otherwise could be captured by the Ariane. We are firmly convinced that the commercialization of ELVs is in the best interests of the United States and recommend you support this activity.

Thank you. I welcome your questions.